**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1. (canceled)

2. (canceled)

3. (currently amended): ~~The field portable mass spectrometer system of Claim 2, wherein the aerosol interface further comprises~~ A field portable mass spectrometer system comprising:

a) an aerosol interface comprising:

an inlet having a vacuum therein, the inlet collecting an environmental specimen containing one or more analytes; and

a nebulizer for injecting metered amounts of MALDI matrix particles into the environmental specimen prior to the inlet collecting the environmental specimen;

b) a sample transporter, the sample transporter interfacing with a sample collector to receive sample deposits thereon;

c) a time of flight (TOF) mass spectrometer, the time of flight mass spectrometer having a sealable opening that receives the sample transported via the sample transporter in an extraction region of the mass spectrometer; and

d) a control unit that processes a time series output by the mass spectrometer for a received sample and identifies one or more agents contained in the sample.

4. (original): The field portable mass spectrometer system of Claim 3, wherein the metered amounts of MALDI matrix particles mixed with the one or more analytes contained in the environmental specimen form a spatially heterogeneous distribution of analyte and matrix.

5. (previously presented): The field portable mass spectrometer system of Claim 3, wherein the metered amount of matrix solution injected into the environmental specimen is adjusted in accordance with differing amounts of environmental background.

6. (currently amended): ~~The field portable mass spectrometer system of Claim 2, wherein the aerosol interface further comprises~~ A field portable mass spectrometer system comprising:

a) an aerosol interface comprising:

an inlet having a vacuum therein, the inlet collecting an environmental specimen containing one or more analytes; and

one or more tape particle collector/impactor stations for collecting, concentrating and separating said one or more analytes contained in said environmental sample;

b) a sample transporter, the sample transporter interfacing with a sample collector to receive sample deposits thereon;

c) a time of flight (TOF) mass spectrometer, the time of flight mass spectrometer having a sealable opening that receives the sample transported via the sample transporter in an extraction region of the mass spectrometer; and

d) a control unit that processes a time series output by the mass spectrometer for a received sample and identifies one or more agents contained in the sample.

7. (currently amended): ~~The field portable mass spectrometer system of Claim 1, wherein~~ A field portable mass spectrometer system comprising:

a) an aerosol interface:

b) a sample transporter, the sample transporter interfacing with a sample collector to receive sample deposits thereon, the sample transporter comprise~~s~~sing a tape that receives the sample deposits from the sample collector, the tape being received at the sealable opening of the mass spectrometer, thereby allowing a sample thereon to be received in the extraction region of the mass spectrometer, the movement of each sample being tracked between the sample collector and the mass spectrometer by using a

magnetic write head to write a reference marking on the tape adjacent the sample upon exiting the sample collector;

c) a time of flight (TOF) mass spectrometer, the time of flight mass spectrometer having a sealable opening that receives the sample transported via the sample transporter in an extraction region of the mass spectrometer; and

d) a control unit that processes a time series output by the mass spectrometer for a received sample and identifies one or more agents contained in the sample.

**8.** (currently amended): The field portable mass spectrometer system of Claims 3, 6, 7, or 15 ~~Claim 7~~, wherein movement of the tape when interfacing with the sample collector is independent of movement of the tape when being received in the mass spectrometer.

**9.** (currently amended): The field portable mass spectrometer system of Claims 3, 6, 7, or 15 ~~Claim 7~~, wherein the sample transporter further comprises a first controllable motor that receives control signals from the control unit and enables independent movement of the tape when interfacing with the sample collector and a second controllable motor that receives control signals from the control unit and enables independent movement of the tape when being received in the mass spectrometer.

**10.** (previously presented): The field portable mass spectrometer system of Claim 8, wherein the independent movement of the tape is provided at least in part by a movable tensioner that interfaces with the tape, the movable tensioner being interposed between the sample collector and the mass spectrometer.

**11.** (previously presented): The field portable mass spectrometer system of Claim 10, wherein the tensioner is a spring-loaded shaft and roller arrangement, the tape being wound around at least a part of the shaft and roller components.

12. (currently amended): The field portable mass spectrometer system of Claims 3, 6, 7, or 15 ~~Claim 1~~, wherein the TOF mass spectrometer comprises a linear TOF mass spectrometer.

13. (currently amended): The field portable mass spectrometer system of Claims 3, 6, 7, or 15 ~~Claim 1~~, wherein the TOF mass spectrometer comprises a linear and/or reflectron TOF mass spectrometer.

14. (canceled)

15. (currently amended): ~~The field portable mass spectrometer system of Claim 14~~ A field portable mass spectrometer system comprising:

a) an aerosol interface:

b) a sample transporter, the sample transporter interfacing with a sample collector to receive sample deposits thereon;

c) a time of flight (TOF) mass spectrometer, the time of flight mass spectrometer having a sealable opening that receives the sample transported via the sample transporter in an extraction region of the mass spectrometer , wherein the sealable opening and the extraction region of the TOF mass spectrometer are provided in a housing attached to or part of the TOF mass spectrometer and the housing further comprises a roughing vacuum chamber portion that connects between the sealable opening of the housing to a vacuum valve; and

d) a control unit that processes a time series output by the mass spectrometer for a received sample and identifies one or more agents contained in the sample.

16. (previously presented): The field portable mass spectrometer system of Claim 15, wherein the housing further comprises a removable cover that is engageable with the sealable opening, the removable cover and the sealable opening forming a vacuum seal when engaged.

17. (previously presented): The field portable mass spectrometer system of Claim 16, wherein a roughing pump interfaces with the roughing vacuum chamber portion and serves to evacuate the roughing vacuum chamber portion when (a) the vacuum seal is formed between the removable cover and the sealable opening and (b) the vacuum valve is closed.

18. (previously presented): The field portable mass spectrometer system of Claim 16, wherein the vacuum seal is provided by at least one o-ring in each of the removable cover and the sealable opening, the o-rings engaging to form a vacuum seal when the removable cover engages the sealable opening.

19. (previously presented): The field portable mass spectrometer system of Claim 16, wherein the cover is a platen.

20. (previously presented): The field portable mass spectrometer system of Claim 16, wherein a surface of the cover that covers the sealable opening comprises an electrode and defines one end of an extraction region of the TOF mass spectrometer in the roughing vacuum chamber portion.

21. (previously presented): The field portable mass spectrometer system of Claim 20, wherein one or more additional electrodes surrounding the roughing vacuum chamber portion and lying between the sealable opening and the vacuum valve defines an another end of the extraction region.

22. (previously presented): The field portable mass spectrometer system of Claim 21, wherein a vacuum pump that interfaces with ~~the~~ a main mass spectrometer vacuum chamber serves to evacuate the main mass spectrometer vacuum chamber.

23. (previously presented): The field portable mass spectrometer system of Claim 22, wherein an open valve between the main mass spectrometer vacuum chamber and the extraction region forms part of the time of flight path of the spectrometer.

**24.** (previously presented): The field portable mass spectrometer system of Claim 23, wherein the vacuum pump that interfaces with the main mass spectrometer vacuum chamber serves to evacuate the main mass spectrometer vacuum chamber and the roughing vacuum chamber when the valve is opened, thereby providing a connected vacuum between the main mass spectrometer vacuum chamber and the roughing vacuum chamber when the valve is opened.

**25.** (new): The field portable mass spectrometer system of Claim 24, wherein the sample transporter comprises a tape and the removable cover contains a port opening on the backside of the tape, the port opening being connected to a compensating vacuum formed by the main mass spectrometer vacuum chamber, the compensating vacuum eliminating differential pressure forces thereby preventing unacceptable tape deflection.

**26.** (new): The field portable mass spectrometer system of Claim 7, wherein the tape is perforated during the time that it receives sample deposits thereby permitting equalization of pressure across the tape and resultant minimization of tape deformation when the tape with sample thereon is received at the sealable opening of the mass spectrometer.

**27.** (new): The field portable mass spectrometer system of Claim 10, wherein the consistency of tape wrapping in a tape cartridge is controlled by the tensioner and the consistency of a drive on a take up reel of the tape cartridge such that the contact point on the backside of the tape for a sample is limited to areas where other samples never touch thereby allowing samples deposited on the tape to be permanently stored for later analysis without being cross contaminated by other samples deposited on the tape.

**28.** (new): The field portable mass spectrometer system of Claim 27, wherein the first and second controllable motors each comprise a drive shaft and tape roller, the drive shaft and tape roller each having a groove formed therein such that the

end regions of the drive shaft and tape roller contact and drive the tape while the groove prevents the sample from contacting the drive shaft and tape roller and thereby contaminating other samples.